REMARKS

This Amendment is submitted in response to the Office Action dated March 12, 2009, and in accordance with the telephone interview courteously granted on June 8, 2009. Claims 12-19 are pending in the application. The Office Action rejected Claims 12-19 under 35 U.S.C. §103(a). Claims 16 and 19 are amended herein. Applicant respectfully submits that the rejections are improper or have been overcome, as set forth in detail below. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

In the Office Action, Claims 14-17 and 19 are rejected under §103(a) as being unpatentable over U.S. 2003/0137485 ("*Wei*") in view of U.S. Patent 6,914,389 ("*Chang*"), and in view of U.S. 2001/0015711 to Aoki ("*Aoki*"). Of the rejected claims, Claims 16 and 19 are the sole independent claims. Amended Independent Claim 11 recites, at least in part, a liquid crystal display apparatus comprising: a liquid crystal interposed between a first substrate and a second substrate; a backlight as a light source for the liquid crystal; a luminance sensor and a thin film device as pixels being formed on the first substrate in a same process, wherein the luminance sensor detects a luminance of the backlight; a control circuit that generates a drive signal to maintain the luminance of the backlight at an almost constant level with respect to time based on a detection signal detected by the luminance sensor; and. Claim 19 has been similarly amended to recite, at least in part, driving at least three-color light emitting devices with the drive signal generated to maintain the luminance level of the backlight at an almost constant level with respect to time. Applicant respectfully traverses because the references do not teach or suggest all of the elements of the presently claimed invention.

Wei describes a thin film transistor (TFT) liquid crystal display that can adjust its light source in response to ambient light levels. The TFT **34** is a luminance detector that detects a ambient light source and helps to modulate the LCD light source. TFT **34** is connected to a light source adjusting circuit **30** and a feedback circuit **36**, shown as a block diagram in Figure 2 and as a circuit diagram in Figure 3. When ambient light enters a first substrate layer **62**, it interacts with the amorphous silicon layer **60** of the photo sensor TFT **34,** generating a current to the feedback circuit **36,** which modulates the light source to optimal brightness levels. In response to an increase in ambient light, TFT **34** would send a signal to the light source adjusting circuit

30 which will enhance, weaken, open or close the light source of the device. Therefore, *Wei* does not describe the detection of LCD light source, and because *Wei* discloses a dynamically adjusting the output of the backlight based on changing ambient light levels, *Wei* also fails to disclose or suggest a control circuit that generates a drive signal to maintain the luminance of the backlight at an almost constant level with respect to time based on a detection signal detected by the luminance sensor, as recited in amended independent Claims 16 and 19.

Chang, in comparison, teaches a direct-type backlight module with a plurality photo sensors that adjusts the relative intensity of the plurality of lamps that make up the backlight. *Chang* has photo sensors **28A to 28D**, and light sources **20A to 20 D,** and the comparative and arithmetic unit **50**. Each photo sensor A through D is aligned respectively with each light source A through D such that a measurement of the intensity of each light source by its respective each photo sensor can be compared in **50**. **50** then adjusts the relative intensity of the lamps **20A to 20D** in order to prevent an uneven luminous intensity of the light on the display panel. That is, *Chang* is directed to achieving even luminance intensity between adjacent lamps **20**. (See, *Chang*, col. 2, lines 1-5), and not to maintaining a constant illumination level with respect to time.

However, even assuming that *Chang* and *Wei* are properly combinable, the combination of these two references fails to teach the claimed invention. The claimed invention requires a control circuit to generate a drive signal to maintain the luminance of the backlight at an almost constant level with respect to time. A review of the specification makes clear that the present application focuses on maintaining a set luminance of the backlight over the life of the display. At [0011], "a control circuit that ... keeps the luminance of the backlight almost constant on the basis of a detection signal detected by the luminance sensor" indicates that maintaining a constant luminance is the goal. In addition, an advantage of the claimed invention is to "keep the luminance of the backlight constant even if aged deterioration takes place in the apparatus." [0018]. In contrast, neither *Wei* nor *Chang* attempts to maintain the luminance of the backlight. *Chang*'s stated goal is to "prevent uneven luminous intensity of the light" by adjusting each light source based on measurements from each light source's respective photo sensor. Col. 2 ln. 3-6; col. 4 ln. 32-42. In other words, each independent light source is varied one against the other to create an even luminance, not to maintain the luminance. The name of the controller in *Chang*,

"comparative and additive unit" further supports that disclosure, as this unit compares the relative intensities in each light source as measured by its photo sensor, and adjusts them appropriately. (See *Change*, col. 4 lines 15-20). Similarly, *Wei* uses the photo sensor to determine whether to enhance, weaken, open or close the light source. (See *Wei*, [0013]). That adjustment could be in response to an increased brightness in the room, requiring more backlighting to the viewing screen, or a deceased ambient light in the room, leading to a reduction in backlighting. Neither of these focuses on maintaining a backlight intensity at an almost constant level with respect to time, as required by the claims.

The *Aoki* reference is merely relied on for the alleged disclosure of "an image display comprising a sample hold circuit 301 to hold an input image signal processing circuit." (See, Office Action, pg. 3). Accordingly, *Aoki* fails to remedy the deficiencies of *Wei* and *Chang*, as discussed above, even assuming that *Aoki* is properly combinable with the remaining references.

In the Office Action, Claims 14 and 15 are rejected in view of *Chang*,*Wei* and *Aoki* as discussed above. Applicant respectfully traverses this rejection for the reasons set forth above. Moreover, with regard to the limitation in Claim 15 of "a housing that houses the first substrate, the second substrate, the backlight, and the control circuit and that covers the luminance sensor", the Examiner asserts that *Chang*, Fig. 1 item 14, meets this limitation. Regardless of whether the substrates are housed in the housing (Fig. 1, item 14 seems limited to lamps 20, metal reflecting sheet 18, and diffuser 16 which would not meet the claim limitations) the claim requires that the housing "cover the luminance sensors". The luminance sensors in Fig. 1 and through out *Chang*, are not covered by the housing, but instead set within the middle of the screen. Therefore they cannot be covered by the housing.

Accordingly, Applicant respectfully requests that the rejection of Claims 14-17 and 19 be withdrawn.

In the Office Action, Claims 12, 13, and 18 are rejected under §103(a) as being unpatentable over *Wei* in view of *Chang* and *Aoki*, and further in view of U.S. Patent 6,791,636 ("*Paolini.*") *Paolini* is relied upon to supply the limitations of a LED array and a diffusing portion, where the LED array is a repetition of at least three colors and the diffusing portion diffuses the color rays and generates white light. Applicant respectfully traverses this rejection. First, *Paolini* fails to cure the problems associated with combining *Chang*, *Aoki* and *Wei* as

described above. Second, even if *Chang*, *Wei* and *Aoki* were combinable, *Paolini* is not combinable with them. For example, *Chang* detects luminance from individual light sources using individual photo sensors. The intensity of those individual light sources are then adjusted to create a uniform backlight intensity. But in *Paolini*, all the individual LEDs in the array are diffused to make a uniform white light. So, the measurement of intensities of individual light sources is not possible. Therefore the combination fails. Similarly, *Wei* measures ambient light and increases or decreases the intensity of the backlight source accordingly. Again, this does not make obvious the claimed invention because it does not address maintaining the luminance of the backlight source.

As the Examiner has cited, *Paolini* does disclose an issue that the claimed invention solves. Specifically, in discussing white light and the relative efficiencies of the red, green and blue LEDs, *Paolini* notes that the efficiencies may change over time, so dynamic adjustment can be made to the energizing signals to compensate for any change in brightness. Col. 5, ln. 32-38. However, as noted in the Applicant's specification, the luminance can be adjusted by the end user or by a producer prior to shipping. [0006] With age deterioration, the user would need to adjust this. *Paolini*, in this disclosure, recognizes that issue as well. However, *Paolini* does not disclose how to achieve that adjustment and nothing in *Paolini*, *Chang*, or *Wei* teach how to maintain the luminance nearly constant. The claimed invention teaches a new display apparatus that has a luminance sensor and controller that maintains the luminance almost constant without the need for the user to adjust it manually.

For the reasons set forth above, Applicant asserts that the claimed invention is non-obvious over the combination of *Chang* and *Wei* or the combination of *Paolini*, *Chang* and *Wei*, and that the other claim objections have been resolved. Applicant respectfully asserts that the claims are in condition for allowance, and earnestly solicit reconsideration of same.

Respectfully submitted,

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